



Time-Temperature Indicator Labels

What It Is:

Boxes of rations sit for months in a hot storehouse, waiting for shipment to troops around the globe. By the time the rations reach their destination, will they still be fresh enough to eat? The Time-Temperature Indicator (TTI) links the quality of the ration to the time and temperature since it's been packed.

Why It's Needed:

New methods of distribution and storage — such as the use of compartmentalized containers — subject rations to higher temperatures during transit. Many rations are also stored and used in high-heat locales. Ration quality is monitored to:

- Predict the remaining shelf life of the rations;
- Decrease food losses;
- Ensure that only nutritious and appetizing foods are served to combat forces.

How It Works:

The indicators are printed on pressure-sensitive labels that are applied to the outside case of Meal, Ready-to-Eat rations. Each TTI consists of an outer reference ring and an inner circle. The inner circle darkens with time, and darkens more quickly as the temperature increases. The quality of food products is very dependent on the time and temperature of storage — so the darker the circle, the less fresh the food.

Benefits:

Low Cost...TTI labels cost less than three cents each.

Reduced Waste...Rations are rotated on the basis of “least fresh, first out.”

Consistent Quality...The labels give inspectors a reliable, state-of-the-art technique to determine each ration's freshness.

Point of Contact:

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Initial



Center
Matches
Reference



Center
Darker Than
Reference

TIME-TEMPERATURE INDICATOR

(Implementation with MRE XVII)

U.S. Army
Soldier and Biological
Chemical Command

Soldier Systems Center
Kansas Street
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